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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/099,812	03/18/2002	Kevin M. Short	11986/59946	4075

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EXAMINER

JACKSON, JENISE E

ART UNIT	PAPER NUMBER
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2131

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/099,812

Applicant(s)

SHORT, KEVIN M.

Examiner

Jenise E. Jackson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 11-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bianco et al.(5,048,086) in view of Ditto et al.

3. As per claims 1, Bianco et al. discloses a remote digital key generation(see fig. 5, sheet 3), applying an initialization code, to cause the first chaotic system to assume a periodic orbit(see col. 2, lines 63-68, col. 5, lines 46-54), allowing the first chaotic system to generate, at least in part based on the periodic orbit, a first key bitstream not determinable solely from the initialization code(see col. 2, lines 63-68, col. 3, lines 5-7, col. 5, lines 46-63), applying the initialization code to a remote second chaotic system(see col. 5, lines 25-63). Bianco does not disclose to drive the second chaotic system into synchrony with the first chaotic system, thereby allowing the second chaotic system to reproduce the first key bitstream. Ditto et al. teaches to drive the second chaotic system into synchrony with the first chaotic system, thereby allowing the second chaotic system to reproduce the first key bitstream(see pg. 1-2). It would have been obvious to one of ordinary skill in the art at the time of the invention to drive the second chaotic system into synchrony with the first chaotic system, thereby allowing the second chaotic system to reproduce the first key bitstream of Ditto et al. with Bianco, because Ditto teaches that contrary to common believe that synchronizing chaotic systems is difficult, Ditto teaches that

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synchronizing chaotic systems is easy, which allows carefully chosen, perturbations to be used for stabilizing any unstable periodic orbits(see pg. 1 of Ditto), this would furnish the basis of a very secure key of Bianco, because the initialization code would not be sent across in order to be intercepted.

4. As per claims 2, 12, Bianco et al. discloses wherein the first chaotic system is defined by a set of differential equations(see col. 1, lines 60-68, col. 2, lines 1-10).

5. As per claims 3, 13, Bianco et al. discloses wherein the first the chaotic system is defined by a mapping function(see col. 5, lines 25-45).

6. As per claims 4, 14, Bianco et al. does not disclose wherein the first chaotic system is defined by an electrical circuit. However, Ditto discloses the first chaotic system is defined by electrical circuit(see pg. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to include a first chaotic system as defined by an electric circuit, the motivation is that synchronizing chaotic systems using an electric circuit, can be done by coupling unidirectional to a subsystem made up of components of the parent system(see pg. 1 of Ditto). This innovation of Ditto proves a new perspective on chaotic dynamics(see pg. 1 of Ditto).

7. As per claim 11, it is rejected under the same basis as claim 1, Further, for an encryptor and decryptor(see col. 5, lines 1-24).

8. Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bianco and Ditto, in view of Lai et al.(SPIE, 1993, pg. 91).

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9. As per claims 5 and 15, Applicant recites a digital communication system with the limitations of claim 1, and with the further limitation that the chaotic system must be defined by an optical system.

10. Bianco nor Ditto disclose a chaotic system defined by an optical system. Lai, however, discloses a chaotic optical system using synchronization and control. Those skilled in the art, would recognize the equivalence of such systems for defining chaotic behavior and would have investigated each such system as an alternative generator for chaotic behavior.

Response to Amendment

11. The Applicant states that the cited references fail to suggest or teach reciting an initialization code. The Examiner disagrees with the Applicant. Bianco discloses that when properly initialized these systems exhibit chaotic behavior when iterated (see col. 2, lines 63-67). Further, Bianco discloses that the chaotic properties are used to generate a sequence for use as the keystream in the encryption system (see col. 3, lines 1-7).

12. Ditto reads on the claim limitation that calls for to drive the second chaotic system into synchrony with the first chaotic system, thereby allowing the second chaotic system to reproduce the first key bitstream, because Ditto teaches that contrary to common belief that synchronizing chaotic systems is difficult, Ditto teaches that synchronizing chaotic systems is easy, which allows carefully chosen, perturbations to be used for stabilizing any unstable periodic orbits (see pg. 1 of Ditto), this would furnish the basis of a very secure key of Bianco, because the initialization code would not be sent across in order to be intercepted. Furthermore, Ditto also teaches how synchronizing chaotic system into a periodic behavior is beneficial, one way in

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which it is beneficial is restore a regular heartbeat form the state of atrial or ventricular fibrillation(see pg. 2 of Ditto).

13. Como was not used to reject claims there remarks in regards to Como are moot.
14. The Applicant teaches that Bianco teaches away from driving the chaotic system onto a periodic orbit. The Examiner disagrees both teach a steady state behavior(see col. 2, lines 66-67 of Bianco, and pg. 2 of Ditto).

Final Action

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenise E Jackson whose telephone number is (571) 272-3791. The examiner can normally be reached on M-Th (6:00 a.m. - 3:30 p.m.) alternate Friday's.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



June 10, 2005



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